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3601 Pacific Avenue
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(via email to espcomments@pacific.edu)

Subject: Draft Economic Sustainability Plan dated August 9, 2011

Dear Ms. Aramburu:

Contra Costa Water District (CCWD) appreciates the opportunity to review the Draft Economic Sustainability Plan (ESP) dated August 9, 2011. Although this draft is an improvement over the previous drafts, it can be further improved by taking a neutral tone, updating the content to reference the best available science whenever possible and including a clear rational plan outlining what can be done to improve the economic sustainability of the Delta in the face of uncertainty. The focus of the document is on potential economic impacts of a range of possible future conditions such as the implementation of the BDCP, sea level rise, ecosystem restoration, and levee failure. The ESP should detail the steps necessary to maintain or enhance the value of Delta agriculture, recreation and services, prioritizing solutions that can be implemented in the short term and retain their benefits to the Delta economy in the long term.

Bay Delta Conservation Plan (BDCP)

There is an over-emphasis in the ESP on the potential impacts of the BDCP given the uncertainty surrounding the BDCP. There could be significant consequences for the Delta if the BDCP were implemented, but an extensive economic analysis should be reserved until more definite results from the BDCP process are available. The current ESP analysis of the BDCP is based upon speculation, not actual results, and it detracts from the ESP's persuasiveness. The ESP should contain detailed information on the existing Delta economy such that impacts of the BDCP on the Delta economy can be fully evaluated, once the BDCP alternatives are defined and analyzed.

This version of the ESP should briefly describe what the BDCP is and the mechanisms by which it would affect the in-Delta communities but not focus on the details of the preliminary modeling results and not compound the uncertainty further by putting a price tag on those potential impacts. The ESP should be updated once the environmental process of the BDCP is complete (draft scheduled for release in June 2012). The DPC should remain engaged in the BDCP process to protect in-Delta interests but should

dedicate the ESP to finding solutions that will work with and without the BDCP. Any changes to Delta conveyance by way of the BDCP or other processes will take many years to construct; the ESP should identify strategies that will protect the Delta economy in the short and long term.

Immediate Actions

Given the amount of uncertainty facing the Delta region, the ESP should focus on a suite of actions that can be taken in the short term to protect the economic vitality of the Delta. Suggested actions that could be evaluated in the ESP include:

- The ESP should be integrated with other Delta planning efforts (Delta Plan, State Parks Recreation Plan, Delta Conservancy Strategic Plan). The ESP should provide details about how it will be coordinated and integrated with other planning efforts.
- The ESP should incorporate and evaluate the economic impact of the recommendations from the State Park's Recreation Proposal for the Sacramento-San Joaquin Delta and Suisun Marsh.
- The DPC should continue to engage in the BDCP process to ensure in-Delta interests are adequately protected and mitigation for any impacts associated with the BDCP is addressed.
- The DPC should work with other federal, state and local agencies to develop a coordinated emergency response plan for the Delta.
- The DPC should participate in State Board processes to update water quality and flow objectives in the Delta to ensure they are protective of agricultural, municipal and industrial uses, as well as protective of the Delta ecosystem.
- The DPC should assist the Delta Stewardship Council in developing a priority list for Delta levee investments and submit the list for inclusion in the Delta Plan
- Evaluate Delta barrier projects that protect water quality and fisheries, while identifying ways that such projects could be modified to avoid impacts to Delta recreation.
- Identify any improvements in agricultural efficiencies that can be made in the Delta that may save money and resources.
- Identify cost effective ways that water users can improve the quality of water returned to the Delta (i.e. work with Sacramento Regional County Sanitation District to identify the most cost effective way to comply with new NPDES permit requirements).
- Prioritize and implement restoration projects in Suisun Marsh and the Western Delta that protect and improve Delta water quality.

Potential Economic Impacts of Water Quality Degradation to in-Delta Drinking Water Providers

CCWD believes the ESP can be improved by expanding the discussion of water supplies for Delta Communities section of Chapter 8. Water quality affects the cost of

operations at CCWD; the saltier the source water, the more water, energy and greenhouse gas production is required to provide customers with high quality drinking water. CCWD's average residential water demand is 65,000 ac-ft/yr and the water quality delivery goal is 65 mg/L chlorides or less. If the source water has a chloride concentration greater than that, CCWD uses releases from Los Vaqueros Reservoir to meet the water quality delivery goal. The total cost of operating Los Vaqueros Reservoir is approximately $90/ac-ft, not including capital costs. CCWD's permits require releases from Los Vaqueros Reservoir are used to meet demand each April to protect sensitive fish species. CCWD also typically uses the reservoir to meet our water quality goals September through December when Delta water quality is poor. If fall salinity at our Rock Slough intake in the Western Delta were to increase by 20% (from 100 mg/L chloride to 120 mg/L chloride), and all of the demand was met using Rock Slough and the reservoir, this would lead to an increase of 4,000 ac-ft in releases from Los Vaqueros Reservoir at an additional operating cost of nearly $94,000/month or $375,000 for the season. This increased use of the reservoir would correspond to a greenhouse gas emissions increase of 190 metric tons of CO_2.

Changes in salinity not only affect CCWD cost to deliver drinking water but also affect the cost for other water providers such as the City of Antioch. The City of Antioch has been diverting fresh water from its intake since the 1860s. The City has an adjudicated pre-1914 appropriative right. When salinity at the City's intake is so high that it precludes use of water at the intake, the City purchases water from CCWD. It costs approximately $500/ac-ft more to buy water from CCWD than it does for the City to use its intake. The City is only partially reimbursed for these purchases according to the terms of an agreement between the City and the California Department of Water Resources (DWR). If salinity in the Delta continues to increase due to sea level rise, changes in land use, and changes to state-wide water management, the cost of providing high quality drinking water to residential customers will continue to increase as well.

CCWD is a partner in the Regional Desalination Project that is currently being evaluated. Together with East Bay Municipal Utility District, San Francisco Public Utility Commission, Zone 7, and the Santa Clara Valley Water District, a 25 million gallons per day (mgd) facility, is being considered at CCWD's westernmost intake, Mallard Slough to provide supplemental and dry year water to project partners. The total plant influent capacity would be 25 mgd with an assumed 80% recovery to generate approximately 20 MGD of product water. The estimated capital costs, including contingencies, range from $150 to $180 million dollars, with annual operation and maintenance costs ranging from $10 to $13 million dollars. The estimated unit cost for desalinated water from this facility is estimated at up to $990/ac-ft. These costs are for production only and do not include the cost of water rights, transmission, use of existing facilities, wheeling and additional treatment, if needed. CCWD looks forward to working with the ESP team directly to improve the estimates currently contained in Chapter 8 of the ESP.

Potential Impacts of Water Quality Degradation to in-Delta Industry

The ESP has not sufficiently described major industries present in the Delta beyond agriculture. Numerous oil refineries, power plants, steel mills, and other industries operate in the western Delta. On average, CCWD provides 32,000 ac-ft per year to industrial customers. CCWD is not the sole provider of industrial water in the region, some industrial facilities use recycled water or maintain their own river intakes. The following discussion contains an overview of the industrial water use concerns regarding salinity; CCWD encourages the ESP team to discussion these issues directly with industrial water users to better understand the economic value of these industries and potential impact of activities that would increase salinity in the region.

Industries use large amounts of water and steam for a variety of processes including boiler feedwater and cooling towers. Both boilers and cooling towers have strict water quality requirements for optimal performance. Water quality degradation would reduce operating efficiencies, or increase the cost of pre-treatment, causing economic impacts to these industries.

Boilers

High purity feedwater is important to ensure proper operation of a boiler system. Reverse osmosis (RO) is the most common technology used to prepare boiler feedwater. CCWD provides over 22,200 ac-ft of water per year on average to two refineries in our service area. Of that total water use, approximately 40% is used as boiler feedwater which requires advanced R.O. treatment. Based on a survey of desalination projects in California[1234], the unit cost per ac-ft of water production increases by $0.06 with every unit increase in salinity as measured as TDS in mg/L. For example, the average salinity at Collinsville in the Western Delta for the past 10 years is 2985 µS/cm, or 1572 mg/L TDS and average salinity at Collinsville during 2008, a critically dry year, was 4680 µS/cm or 2453 mg/L TDS. The difference in advanced treatment cost associated with this level of salinity increase translates to $53/ac-ft. The total economic impact of this salinity increase to CCWD's two refinery customers would be at least $461,000/yr. Other industrial customers use other treatment methods that have not been quantified here so the total economic impact of increased salinity for CCWD industrial customers is greater than the above estimate for refineries. For all industrial uses dependant on Delta water, the increase in annual cost associated with a substantial increase in salinity would far exceed the cost estimated above.

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[1] MMWD Engineering Report Seawater Desalination Pilot Program, January 2007

[2] Seawater Reverse Osmosis Desalination Pilot Test Program Report, April 2010 http://www.scwd2desal.org/documents/Reports/Pilot_Plant/FINAL%20Pilot%20Program%20Report_April10.pdf

[3] Opflow April 2010, page 36.

[4] BARDP Pilot Testing at Mallard Slough, Pilot Plant Engineering Report, June 2010

Cooling Towers

In water intended for cooling tower use, chloride content should be less than 300-450 ppm. If it is greater than 300 ppm, it is considered poor quality water, and if it is greater than 450 ppm, it is not suitable for use[5]. Increased salinity reduces thermal conductivity, decreasing cooling tower performance and necessitates more fresh water to cycle through to maintain performance. For example, water provided to our industrial customers is typically around 230 mg/L TDS and this level of salinity allows the refineries to use the water for six cycles of concentration to reach their desired blowdown concentration. Increasing salinity by 20% would decrease the cycles of concentration from six to five, necessitating a 17% increase in water use to reach the same blowdown concentration. A 17% increase in industrial water purchased from CCWD would cost roughly $985,000/yr and generate an additional 81 metric tons of CO_2. High salinity also increases the corrosion rate in the cooling system[6]. Corrosion causes two major problems. First, it may cause failure of equipment resulting in additional cost of replacement and plant downtime. Secondly, the accumulation of corrosion products leads to fouling in the heat exchanger, reducing efficiency. If salinity in the Western Delta were to exceed 300ppm, on a regular basis industrial users would need to seek alternative cooling water sources or invest in additional water treatment at additional costs.

CCWD looks forward to providing further input to the Economic Sustainability Plan as the process continues. Please call me at (925) 688-8100 or Maureen Martin at (925) 688-8323 if you have any questions or concerns.

Sincerely,

Greg Gartrell
Assistant General Manager

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[5] RMC. (2009). *East County Industrial Recycled Water Facilities Plan* .

[6] Nelson, J. A. (1986). *Cooling Towers and Salt Water.* Retrieved August 31, 2011, from SPX Cooling Technologies: http://spxcooling.com/pdf/CTs-and-Salt-Water.pdf